REMARKS

Claims 1 and 53 have been amended, and new claim 57 has been added. Thus, claims 1-28 and 42-57 are pending in the present application. The claim amendments and new claim are supported by the specification and claims as originally filed, with no new matter being added. Accordingly, favorable reconsideration of the pending claims is respectfully requested.

1. Rejections Under 35 U.S.C. § 102

Claims 1-4, 53, 54, and 56 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,254,390 to Lu (hereinafter "*Lu*") for the reasons set forth on pages 2-3 of the Office Action. Applicants respectfully traverse.

Lu was cited for disclosing transparent overlays that can be imaged with information to enhance the authenticity of a document. Some of the information can be in the form of so-called "flip-flop" images that are viewable only across a narrow range of angles and change color across that range of angles. The overlay article includes a transparent base sheet, an array of microlenses on one face of the base sheet, and a reflective layer on the opposite face.

Applicants note that the presently claimed articles do not use microlenses such as disclosed in *Lu*. Such microlens arrays as disclosed in *Lu* do not have dimensions that cause an optical interference pattern/diffraction grating as the Examiner suggests. The microspheres of the microlens array disclosed in *Lu* have an average diameter of about 65 micrometers (col. 6, lines 55-56), which is way too large for interference effects to apply. In contrast, holographic images or diffraction gratings are constructed such that the line spacing is on the order of a quarter wavelength of light (*i.e.*, about 1000-2000 Angstroms or 0.1-0.2 micrometers).

In addition, Applicants note that the colored "flip-flop" image referred to in *Lu* is based on the thickness of the transparent reflective layer 27 (col. 5, lines 4-6). As noted in Example 2 of *Lu*, the relative thickness of the ZnS reflective layer caused slight color changes: "When viewed through the overlay, that printed information was clearly readable in spite of a faintly colored 'flip-flop' image where the clear ink had been applied..." (col. 9, lines 1-3). The "flip-flop" is only seen over a "narrow range of angles" (col. 4, lines 35-39). While it is true that there will be a color change with viewing angle even for a single layer of high index material such as ZnS, the effect is very slight and would be difficult to see in low ambient light conditions. This stands in contrast to the presently claimed articles, where strong intense colors (high chroma) are seen over a large range of angles. Since the articles of the claimed invention have high chroma for all hues at a large range of angles, they are not difficult to see in low ambient light.

Accordingly, for the above reasons, claims 1-4, 53, 54, and 56 are not anticipated by *Lu*. Applicants therefore respectfully request that the rejection of claims 1-4, 53, 54, and 56 under 35 U.S.C. § 102(b) be withdrawn.

2. Rejections Under 35 U.S.C. § 102/103

Claims 1, 4, 8, and 53-56 were rejected under 35 U.S.C. § 102(e)/103 as being anticipated by or obvious over U.S. Patent No. 5,856,048 to Tahara et al. (hereinafter "*Tahara*") for the reasons set forth on pages 3-4 of the Office Action. Applicants respectfully traverse.

Tahara was cited for disclosing an information recorded media including a release layer, a hologram layer, a blocking layer, an absorbing ink layer, a reflecting layer, and an adhesive (citing Figure 14). The Examiner admits that *Tahara* does not teach an "observable discrete

color shift" as recited in the present claims, but asserts that such a feature is inherent in the device of *Tahara*, or obviously provided by the process disclosed in *Tahara*. Applicants respectfully disagree.

Claims 1 and 53 in the present application now recite a "visible light transmissive substrate." In contrast, *Tahara* describes devices for visually blocking printed information on a substrate by use of a visible light blocking infrared transmissive layer. The medium shown in Figure 14 of *Tahara* has a hologram layer 10 on one side of a blocking layer 11 that transmits infrared light and absorbs visible light (col. 21, lines 38-41). A printed layer 3 is formed from infrared absorbing or reflecting ink on the opposite side of blocking layer 11, and an infrared absorbing or reflecting layer 38 is formed over printed layer 3. Such infrared absorbing or reflecting inks and layers as disclosed in *Tahara* are not color shifting optical coatings since they are designed for absorbing or reflecting infrared light which lacks any color. Thus, *Tahara* does not teach a "color shifting optical coating" on a surface of a "visible light transmissive substrate" as recited in present claims 1 and 53. Since the articles of the present invention use a visible light transmissive substrate rather than a visible light blocking layer as in *Tahara*, the present articles allow the imagery and colors to be seen on either side of the articles.

Accordingly, for the above reasons, claims 1, 4, 8, and 53-56 are not anticipated by or obvious over *Tahara*. Applicants therefore respectfully request that the rejection of claims 1, 4, 8, and 53-56 under 35 U.S.C. § 102/103 be withdrawn.

3. Rejections Under 35 U.S.C. § 103

Claims 1-6, 8-13, 18-22, 53, 54, and 56 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,549,953 to Li (hereinafter "*Li*") in view of *Lu* for the reasons set forth on pages 4-7 of the Office Action. Applicants respectfully traverse.

Li was cited for disclosing a thin film structure for optical media that provides a built-in security feature in which the color changes with viewing angle. The thin film structure includes a substrate, a recording (absorbing) layer, a spacer (dielectric) layer, and a reflecting layer. The Examiner admits that *Li* fails to teach an optical interference pattern on the side opposite the optical coating as recited in the present claims, but asserts that it would have been obvious to add the microlenses of *Lu* (discussed previously) to the substrate of *Li*. Applicants respectfully disagree.

Li does not disclose the use of a holographic or diffractive layer or for that matter any embossed layer in its device for good reason. *Li* states that in "principle, security devices such as optical thin films, holograms, gratings and micro-prisms can be attached to optical media to protect them. However, in practice these attached security devices will to some extent affect the normal operation of the optical media or limit the working area. Therefore, it would be desirable for the media to have a built-in security feature which will not interfere with the normal operation of the media." (Col. 1, lines 20-27). Thus, *Li* teaches away from the presently claimed invention which utilizes diffractive/holographic patterns in addition to a color shifting layer.

Further, there would have been no motivation to add the microlenses of *Lu* to the substrate of *Li*. Such microlenses would interfere with the normal operation of optical media such as disclosed in *Li*, thereby destroying the intended function of the optical media.

In addition, even if the microlenses of *Lu* are added to the substrate of *Li* as suggested by the Examiner, the presently claimed invention would still not be met. As discussed previously, the microlens arrays of *Lu* do not have dimensions that cause an optical interference pattern/diffraction grating, since the microspheres of the microlens arrays have an average diameter of about 65 micrometers, which is too large to produce interference effects. Thus, the combination of *Lu* and *Li* suggested by the Examiner would still not meet the presently recited limitations of an optical interference pattern or diffraction grating pattern combined with a color shifting optical coating.

By combining holographic/diffractive imagery with a thin film interference color shifting coating as in the present invention, an enhanced high security article is achieved that has improved security. These security articles have both the intricate imagery of the hologram/diffractive system while at the same time having discrete color shifts with angle. Each of these features enhances the security of the other.

Accordingly, for the above reasons, claims 1-6, 8-13, 18-22, 53, 54, and 56 would not have been obvious over the cited references. Applicants therefore respectfully request that the rejection of these claims under 35 U.S.C. § 103(a) be withdrawn.

4. New Claim

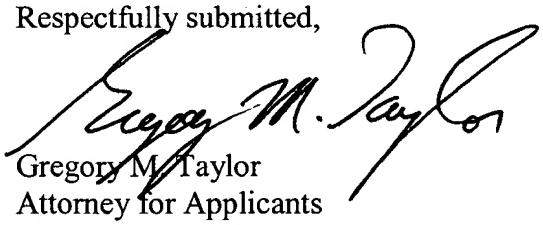
New independent claim 57 is directed to a security article and includes limitations similar to those of present claim 9, except that claim 57 recites that the first surface has a holographic image pattern, with the article exhibiting a holographic image effect in addition to first and second background colors. Accordingly, new claim 57 also presents patentable subject matter, and is readable on the currently elected species.

CONCLUSION

In view of the foregoing, Applicants respectfully request favorable reconsideration and allowance of the present claims. In the event there remains any impediment to allowance of the claims, which could be clarified in a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney.

Dated this 15th day of July 2002.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW THE CHANGES MADE

IN THE CLAIMS:

Claims 1 and 53 have been amended as follows:

1. (Twice Amended) A security article comprising:

a visible light transmissive substrate having a first surface and an opposing second surface, the first surface having an optical interference pattern; and

a color shifting optical coating on the second surface of the substrate, the optical coating providing an observable discrete color shift such that the article has a first background color at a first angle of incident light or viewing and a second background color different from the first background color at a second angle of incident light or viewing;

wherein the article exhibits an optical interference effect in addition to the first and second background colors.

53. (Once Amended) A security article comprising:

a visible light transmissive substrate having a first surface and an opposing second surface, the first surface having an optical interference pattern; and

a color shifting optical coating on one of the first or second surfaces of the substrate, the optical coating providing an observable discrete color shift such that the article has a first background color at a first angle of incident light or viewing and a second background color different from the first background color at a second angle of incident light or viewing;

wherein the article exhibits an optical interference effect in addition to the first and second background colors.